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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/813,856	03/22/2001	Masayuki Orihashi	P20798	3437

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EXAMINER	
DEPPE, BETSY LEE	

ART UNIT	PAPER NUMBER
2637	

DATE MAILED: 10/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/813,856	ORIHASHI ET AL.	
	Examiner	Art Unit	
	Betsy L. Deppe	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 8-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 8-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/2/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. The rejection of canceled claim 6 (wherein the recited subject matter is now incorporated into claim 5) under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement has been withdrawn. The applicant's arguments, see pages 11-12, filed August 5, 2004, with respect to the incorrectness of the rejection of claim 6 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement have been fully considered. Upon reconsideration, the rejection under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement is inappropriate and has been withdrawn. However, since the applicant's argument on pages 11-12 that the detailed description supports the claimed limitation of ***linear*** quantization is not persuasive, an objection to the specification as lacking antecedent basis for the claimed terminology is made because of the inconsistency between the claimed invention in claim 5, as amended, and the detailed description.

With respect to the applicant's assertion that the quantization sections 302, 401 and 602 depicted in Figures 3-6 are actually performing linear quantization, page 24, lines 3-4 contradicts this assertion. Page 24, lines 3-4 recites: "Quantizing section 302 performs quantization (i.e., ***non-linear*** quantization) on the band limited signal 350 . . ." (emphasis added) Furthermore, the description corresponding to Figure 6 specifies that "Using such ***non-linear*** quantization . . ." (emphasis added) on page 50, line 5. Therefore, according to the detailed description, the quantizers in Figures 3-6 are

performing non-linear quantization, ***not*** linear quantization as recited in amended claim 5 and asserted by the applicant.

2. Applicant's arguments filed August 5, 2004 have been fully considered but they are not persuasive with respect to the rejection of the claims under Baier et al. (US Patent No. 5,375,255)

3. Applicant's arguments with respect to the claims that are rejected as being anticipated by Tanaka et al. (US Patent No. 4,800,574), Legrand et al. (US Patent No. 4,446,646), Arens et al. (US Patent No. 5,301,364), and Ichihara (US Pub. No. 2003/0086513 A1), respectively, have been considered but are moot in view of the new ground(s) of rejection.

Specification

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the detailed description does not describe a quantizer that performs linear quantization on the received signal, as recited in claim 5.

Claim Objections

5. The claims are objected to because of the following informalities:

in claim 1, line 9, "the received signal" should be the "the ***processed*** received signal" in order to be consistent with the detailed description and the figures. (Also, see claim 19, line 7). As dependent claims of claim 1, claims 2-5 and 18 are also objected to for the same reason.

in claim 10, line 3, "an" should be inserted before "arithmetical."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 11, 12, 15 and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is unclear how to convert "the non-linear signal into a signal represented by a code system" as recited in claim 11, lines 5-6. It is unclear what is meant by a "code system" and how a signal is "represented by a code system." For example, how does the converted non-linear signal differ based on the code system? Although the specification describes converting the non-linear signal, it does not describe converting the "the non-linear signal into ***a signal represented by a code***

system" (emphasis added). Therefore, one skilled in the art is not able to make and/or use the claimed invention. As dependent claims of claim 11, claims 12, 15 and 16 are also rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

Claim Rejections - 35 USC § 102

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 1-5 and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Baier et al. (US Patent No. 5,375,255 cited in the Office Action mailed May 13, 2004).

10. With regard to claim 1, Figures 2 and 3b of Baier et al. disclose the claimed invention including a receiver (2) and a distortion corrector (30) wherein the distortion corrector comprises a distortion estimator (TABLE in Figure 3b) that outputs a correcting signal based on an inverse distortion characteristic of the receiver and a distortion compensator (multiplier in Figure 3b). (See Figure 2; column 3, line 56 - column 4, line 44; column 5, lines 60-65; and column 6, lines 30-38)

11. With regard to claim 2, Figure 2 of Baier et al. discloses the claimed invention including the receiver comprised of a quadrature demodulator (23). (See column 3, lines 56-64 and column 4, lines 21-26)

12. With regard to claim 3, Figure 2 of Baier et al. discloses the claimed invention including the receiver comprised of a filter calculator that limits a frequency band of the received signal (20 and 21). (See column 4, lines 4-6)

13. With regard to claim 4, Figure 2 of Baier et al. discloses the claimed invention including the receiver comprised of an adjuster that adjusts an amplitude of the received signal (22). (See column 4, lines 6-16)

14. With regard to claim 5, Figure 2 of Baier et al. discloses the claimed invention including the receiver comprised of a quantizer for performing linear quantization (25).

15. With regard to claim 18, Baier et al. discloses the claimed invention including performing reception processing on an instantaneous signal. Since the analog receiving section (2) uses only the currently received signal, it is implicit that the received signal comprises an instantaneous signal.

16. With regard to claim 19, Figures 2 and 3b of Baier et al. disclose the claimed invention including initially processing a received signal (2); estimating a non-linear distortion introduced by initial processing and generating a correcting signal based on an inverse distortion characteristic (TABLE in Figure 3b); and multiplying the processed received signal and the correcting signal to remove the non-linear distortion (multiplier in Figure 3b). (See Figure 2; column 3, line 56 - column 4, line 44; column 5, lines 60-65; and column 6, lines 30-38) Although the demodulating step is not explicitly shown in Figures 2 and 3b, Baier et al. implicitly teaches demodulating/decoding the multiplied received signal. (See column 1, lines 32-35 and column 5, lines 40-45)

17. With regard to claim 20, Figure 2 of Baier et al. discloses the claimed invention including initial processing comprising at least one of amplifying (22), quantizing (25) and quadrature demodulating (23).

18. Claims 13 and 17 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Tanaka et al. (US Patent No. 4,800,574 cited in the Office Action mailed May 13, 2004). Figure 16 shows a receiver that performs reception processing wherein the receiver comprises a non-linear quantizer (52) and a distortion converter (the "non-linear to linear converter") that converts the non-linear quantized signal to a linear signal. (See the abstract; column 9, line 55 - column 10, line 12; column 10, line 57 - column 11, line 3; column 11, lines 31-51; and claim 1) Since the non-linear to linear circuit expands the output of the non-linear AD converter, it is inherent that the distortion converter compensates/corrects the non-linear distortion introduced by the non-linear quantizer/AD converter. Furthermore, it is implicit that the received signal comprises an instantaneous signal.

Claim Rejections - 35 USC § 103

19. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

20. Claims 8-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. as applied to claim 13 and further in view of Baier et al.

21. With regard to claim 8, Tanaka et al. discloses the claimed invention except for the distortion corrector (i.e. the "non-linear to linear converter") correcting the non-linear distortion using at least a quantization characteristic of the quantizer. Figure 3b of Baier et al. discloses an expansion circuit that uses the non-linear characteristic of the source of the non-linear distortion. (See column 2, lines 39-58) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use at a quantization characteristic (i.e. the non-linear characteristic) of the quantizer (i.e. the source of the non-linear distortion) in Tanaka et al. in order to accurately recover the transmitted data.

22. With regard to claim 9, Tanaka et al. in view of Baier et al. discloses the claimed invention including a filter calculator. (See Tanaka et al., "510" in Figure 16)

23. With regard to claim 10, Tanaka et al. in view of Baier et al. discloses the claimed invention including a calculator for performing arithmetical calculation. (See Baier et al., column 2, lines 48-52 and column 4, lines 34-37)

24. With regard to claim 14, Tanaka et al. discloses the claimed invention except for the distortion converter/corrector comprising a distortion estimator and a distortion compensator as recited. Figure 3b of Baier et al. discloses an expansion circuit comprised of a distortion estimator (TABLE in Figure 3b) that outputs a correcting signal based on an inverse distortion characteristic of the receiver and a distortion compensator (multiplier in Figure 3b). (See Figure 2; column 3, line 56 - column 4, line 44; column 5, lines 60-65; and column 6, lines 30-38)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the expansion circuit disclosed by Baier et al. in the non-linear to linear (i.e. expansion) circuit in Tanaka et al. in order to use an economical AD converter (see Tanaka et al. column 11, lines 48-50) while ensuring accurate data recovery by compensating for the distortion caused by the economical converter.

Conclusion

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betsy L. Deppe whose telephone number is (571) 272-

3054. The examiner can normally be reached on Monday, Wednesday and Thursday (8:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272 - 2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Betsy L. Deppe
Primary Examiner
Art Unit 2637